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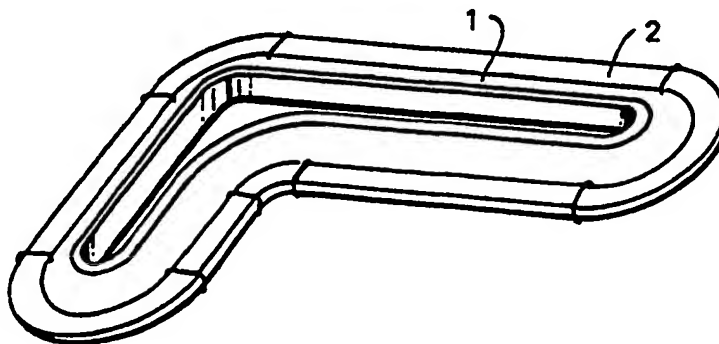
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(54) Title: A CLAIM CONVEYOR

(57) Abstract

A claim conveyor comprises in combination an inclined conveyor (1) and a horizontal conveyor (2) each of which defines an endless conveyor surface. The respective conveyor surfaces run parallel to each other with that of the inclined conveyor (1) lying inside that of the horizontal conveyor (2) and with the lower edge thereof continuous with the inside edge of the horizontal conveyor (2).



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DESCRIPTIONA CLAIM CONVEYOR

The present invention relates to claim conveyors. Claim conveyors are usually found in the arrival halls of airports, but may also be put to good effect in
5 baggage loading and unloading areas of airports. They may also be used in parcel handling businesses where it is required to manually sort parcels out according to their destination. However, for the purposes of this description their use in baggage handling only will be
10 referred to.

The baggage claim conveyor forms a closed loop conveying surface onto which baggage unloaded from an aircraft can be placed for collection/sortation by the passengers disembarked from that aircraft or by airport
15 operatives. The length of the closed loop conveying surface and its speed of travel are such that persons waiting by the side of the claim conveyor can easily reach across to pick up the baggage as it passes them.

Generally speaking there are two types of
20 conventional baggage claim conveyors, namely the inclined claim conveyor and the horizontal claim conveyor.

In the inclined claim conveyor the conveyor surface is inclined transversely to the direction of
25 travel of the conveyor. The direction of the incline

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is downwards from the back of the conveyor to the front and a sidewall is, therefore, usually provided along the front edge of the conveyor to retain the baggage. Inclined claim conveyors allow bags to be stacked two
5 or perhaps three deep up the slope of the conveying surface and have, therefore, a considerable carrying capacity per unit of length.

In a horizontal claim conveyor the conveyor surface is horizontal or flat transversely to the
10 direction of travel of the conveyor. Consequently, the conveyor easily provides an endless conveying surface which can transverse all three planes in one continuous integrated line operation. However, because bags cannot be placed side by side across the width of a
15 horizontal claim conveyor because of the risk that they might overhang the side of the conveyor and even fall off, the carrying capacity of a horizontal claim conveyor is less than that of an inclined claim conveyor.

20 Both inclined claim conveyors and horizontal claim conveyors perform adequately within the confines of their respective operating specifications. However, as more aircraft with increased passenger carrying capacities come into service the carrying capacities of
25 the baggage claim conveyors must be correspondingly increased to cope with the increased volumes of baggage. This can, of course, be achieved by

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increasing the overall length of the baggage claim conveyor, but this does not always represent an acceptable or satisfactory solution to the problem as this also means that the size of the space occupied by the baggage claim conveyor is substantially increased.

It is an object of the present invention to provide a claim conveyor which has an increased carrying capacity per unit length of conveyor as compared with conventional conveyors.

According to the present invention there is provided a claim conveyor comprising in combination an inclined conveyor and a horizontal conveyor each of which defines an endless conveyor surface, wherein the respective conveyor surfaces run parallel to each other with that of the inclined conveyor lying inside that of the horizontal conveyor and with the lower edge thereof adjacent to the inside edge of the horizontal conveyor.

Advantageously, the speed of the outermost horizontal conveyor is different from that of the innermost inclined conveyor.

In this regard, when the speed of the horizontal conveyor is the same as or less than that of the inclined conveyor, articles will build up or accumulate on the inclined conveyor. Conversely, when the speed of the horizontal conveyor is greater than that

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of the inclined conveyor articles will be positively drawn down from the inclined conveyor onto the horizontal conveyor. As will be readily appreciated, by varying the relative speeds of the horizontal and inclined conveyors it is possible to achieve optimum matching between the rate of feed of baggage to the claim conveyor and the rate baggage is picked up from the claim conveyor at any given time. For example, when in use in the arrivals hall of an airport it is anticipated that initially large quantities of baggage will arrive at the claim conveyor very quickly, whilst the collection rate will be relatively slow. Hence, it will be advantageous to accumulate baggage on the inclined conveyor. As time passes, the rate of feed of baggage to the claim conveyor will slow, yet the pick up rate will remain the same or increase. Hence it will be advantageous to draw baggage down onto the horizontal conveyor quickly.

Furthermore, it may be advantageous to provide a slight "drop off" between the lower edge of the inclined conveyor and the inside edge of the horizontal conveyor - that is to say there may be a short vertical spacing between the two. This assists the feed rate of articles from the inclined conveyor onto the horizontal conveyor.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

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Fig. 1 shows a perspective view of a baggage claim conveyor according to the present invention; and,

Fig. 2 shows a cross section through the baggage claim conveyor of Fig. 1.

5 Referring now to Fig. 1 of the accompanying drawing there is shown a baggage claim conveyor which follows a typical conveyor circuit path. The baggage claim conveyor comprises an innermost inclined conveyor 1 and an outermost horizontal conveyor 2, both
10 of which run parallel to each other and travel in the same direction around the circuit path.

Baggage to be collected is discharged onto the inner inclined conveyor 1 from a single or multiple conveyor (not shown) mounted on the inner periphery of
15 the baggage claim conveyor. Conveniently, the conveyors 1 and 2 take their drive from a common drive means, but if operating conditions demand it separate drive means may be provided for each conveyor 1 and 2.

The relative speeds of the conveyors 1 and 2 are
20 substantially the same, but it is envisaged that in practice the relative speeds of the horizontal conveyor 2 and the inclined conveyor 1 will vary during each operation so that at any given time baggage may be accumulating on the inclined conveyor 1 or it may be
25 positively drawn down onto the horizontal conveyor 2.

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As far as the relative speeds of the conveyors 1 and 2 are concerned the most important consideration is that the relative speeds should be carefully matched to prevent excessive accumulation on the inclined conveyor or overly rapid pull down onto the horizontal conveyor.

Referring now to Fig. 2 of the drawings there is shown a section through the baggage claim conveyor of Fig. 1.

Both the inclined conveyor 1 and the horizontal conveyor 2 are essentially conventional in design. Each defines a conveyor surface which is comprised of a series of overlapping rubber slats 3 supported on the underside by a folded steel carrier 4. A chain 5 is connected to each of the steel carriers 4 and serves to impart forward motion to the conveyor surface.

In the case of the horizontal conveyor 2 each of the steel carriers 4 is supported in the middle by the chain 5 and at each end on an angled bracket 6 which is bolted to a support frame 7 of the claim conveyor. In order to ensure that the steel carriers 4 move easily over the angled brackets 6 each of the ends of each of the steel carriers 4 is provided with a high density polyethylene skid 8.

Turning now to the inclined conveyor 1 each of the steel carriers 4 is supported in the middle by the chain 5 and at or towards the lowermost end thereof

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by a guide wheel 11 running in a C-shaped track section 10 secured to the frame 7 of the claim conveyor. The lower end of the conveyor surface of the inclined conveyor 1 is spaced vertically above the inside edge of the conveyor surface of the horizontal conveyor 2 by an angled plate 9.

As can readily be seen the lower edge of the inclined conveyor 1 is essentially continuous with the inside edge of the horizontal conveyor 2. This ensures that baggage on the inclined conveyor 1 is drawn down the slope of the inclined conveyor 1 and off onto the horizontal conveyor 2. The transfer of baggage from the inclined conveyor 1 onto the horizontal conveyor 2 is further facilitated by the vertical spacing of the lower edge of the inclined conveyor 1 above the horizontal conveyor 2. This assists the feed rate of articles from the inclined conveyor 1 onto the horizontal conveyor 2.

As mentioned hereinbefore motion is imparted to the inclined conveyor 1 and the horizontal conveyor 2 by means of respective chain drives 5. These chain drives are conventional design and therefore a detailed description is not given herein. Of course, other forms of drive transmission means could be employed without departing from the scope of the present invention.

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Although not shown in either of the accompanying drawings, a flexible section may be provided at the junction of the inclined conveyor 1 and the horizontal conveyor 2 to prevent wearing of the rubber slats 3 defining the conveyor surfaces and to prevent baggage from becoming caught in the gap therebetween. This is particularly desirable where the adjacent edges of the two conveyors 1 and 2 overlap each other and are not vertically spaced.

Moreover, it may be desirable to provide a moving or static side wall along the outer/front edge of the horizontal conveyor 2 so that baggage on the horizontal conveyor 2 is not spilled off by baggage travelling down from the inclined conveyor 1.

As baggage is conveyed around the circuit path on the inclined conveyor 1 it is eventually drawn down on the horizontal conveyor 2 from where it can easily be picked off as it approaches its owner or an airport operative.

By combining an inclined conveyor and a horizontal conveyor after the fashion of the baggage claim conveyor according to the present invention, the carrying capacity per unit of length of the resultant baggage claim conveyor is greatly increased over conventional conveyors. In this respect, the inclined

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conveyor acts as a holding reservoir for the baggage loaded onto the baggage claim conveyor until space is free for it on the horizontal conveyor; then it passes down onto the horizontal conveyor to be picked off.

- 5 The baggage loaded onto the inclined conveyor can be stacked up two or three deep over its entire length with little or no danger or spillage.

The inclined and horizontal conveyors which together comprise the claim conveyor of the present
10 invention may each be of conventional design.

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CLAIMS

1. A claim conveyor comprising in combination an inclined conveyor and a horizontal conveyor each of which defines an endless conveyor surface, wherein the respective conveyor surfaces run parallel to each other with that of the inclined conveyor lying inside that of the horizontal conveyor and with the lower edge thereof continuous with the inside edge of the horizontal conveyor.

2. A claim conveyor according to Claim 1, wherein the speed of the outermost horizontal conveyor is different from that of the innermost inclined conveyor.

3. A claim conveyor according to Claim 1 or 2, wherein the lower edge of the inclined conveyor is vertically spaced above the inside edge of the horizontal conveyor.

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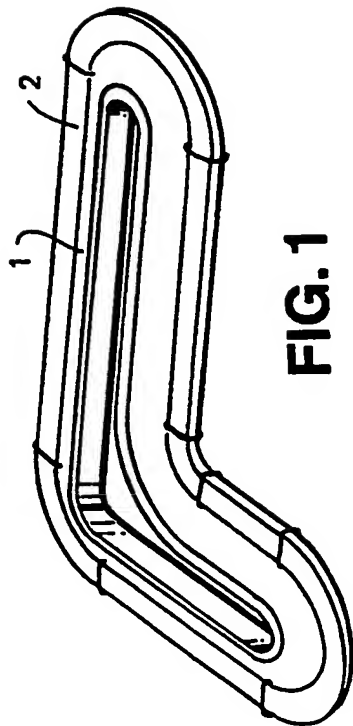


FIG. 1

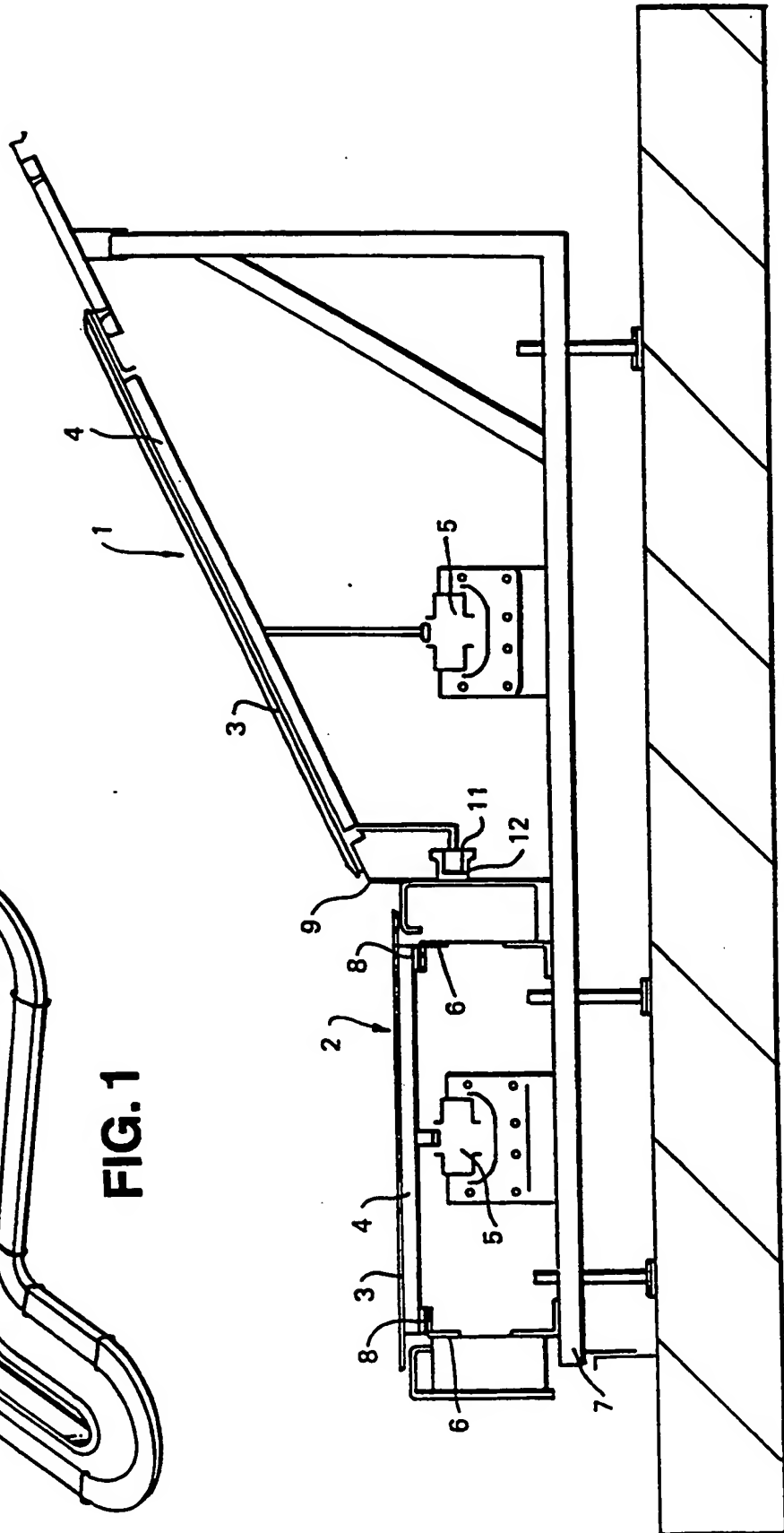


FIG. 2

A. CLASSIFICATION OF SUBJECT MATTER B 65 G 15/12, B 65 G 21/16		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) B 64 D, B 64 F, B 65 G		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 3 854 574 (THEIJSMEIJER) 17 December 1974 (17.12.74), fig. 1.	1, 3
Y	DE, C, 669 951 (EICKHOFF) 07 January 1939 (07.01.39), page 2, lines 75-81; fig. 2.	1, 3
Y	US, A, 5 165 526 (CONKLIN) 24 November 1992 (24.11.92), fig. 1.	1, 3
Y	DE, C, 52 020 (LUTHER) 08 May 1890 (08.05.1890), fig. 3.	1, 3
<input type="checkbox"/> Further documents are listed in the continuation of box C. <input type="checkbox"/> Patent family members are listed in annex.		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>		
Date of the actual completion of the international search <div style="text-align: center; font-size: 1.2em;">21 April 1994</div>		Date of mailing of the international search report <div style="text-align: center; font-size: 1.2em;">- 4.05.94</div>
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016		Authorized officer <div style="text-align: center; font-size: 1.2em;">BAUMGARTNER e.h.</div>

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	-- US, A, 4 270 650 (KROHN) 02 June 1981 (02.06.81), column 3, lines 52-55.	1
A	-- US, A, 4 901 842 (LEMBOKE) 20 February 1990 (20.02.90), fig. 1. -----	2

ANHANG

ANNEX

ANNEXE

zum internationalen Recherchen-
bericht über die internationale
Patentansmeldung Nr.

to the International Search
Report to the International Patent
Application No.

au rapport de recherche inter-
national relatif à la demande de brevet
international n°

PCT/GB 94/00210 SAE 84927

In diesem Anhang sind die Mitglieder
der Patentfamilien der in obenge-
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US A 3854574	17-12-74	AU A1 69464/74 BR A0 7404380 CA A1 990678 DE A1 2425769 FR A1 2231588 FR B1 2231588 GB A 1469805	04-12-75 07-01-75 08-06-76 02-01-75 27-12-74 20-04-79 06-04-77
DE 669951		keine - none - rien	
US A 5165526	24-11-92	AU A1 23155/92 WO A1 9312020	19-07-93 24-06-93
DE 52020		keine - none - rien	
US A 4270650	02-06-81	DE A1 2939625 DE B2 2939625 DE C3 2939625 DD C 147197 DK A 5115/79 DK B 152775 DK C 152775 GB A1 2061854 GB B2 2061854 NO A 793867 PL A1 220386 PL B1 125505 SE B 418566 SE C 418566 SU A3 923348 ZA A 7906929	02-04-81 11-06-81 18-02-82 25-03-81 31-05-81 16-05-88 24-10-88 20-05-81 29-06-83 01-06-81 19-06-81 31-05-83 15-06-81 24-09-81 23-04-82 30-12-81
US A 4901842	20-02-90	CH A 674834 DE A1 3718206 GB A0 8812851 GB A1 2205078 GB B2 2205078 JP A2 63315416	31-07-90 15-12-88 06-07-88 30-11-88 18-12-91 23-12-88